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REMARKS

This amendment is intended as a full and complete response to the Advisory Action, dated June 14, 2004. In the Office action, the Examiner notes that claims 1-17 are pending, of which claims 1-17 stand rejected. By this amendment, claims 1, 3-13, and 15-17 have been amended and claims 2 and 14 continue unamended.

In view of the amendments and following discussion, the Applicant submits that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. §103. Thus, the Applicant believes that all of these claims are now in allowable form.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 103

A. Claims 1-12

The Examiner has rejected Claims 1-3, 11, and 12 as being obvious under 35 U.S.C. §103 over Norman, Jr. (US 5,742,605, issued April 21, 1998 hereinafter "Norman") in view of Lee (US 6,594,236, issued July 15, 2003). The Applicant respectfully traverses the rejection.

The Applicant's independent claim 1 (and similarly independent claims 4, 6, 8, and 11) recites features that the Applicant considers as being inventive. For example, independent claim 1, recites:

*"In a communications system utilizing a digital cross-connect system (DCS) element management system (EMS) for managing DCS network elements and a SONET EMS for managing SONET add/drop multiplexer (ADM) network elements, apparatus comprising:
a non-homogeneous SONET ring network including a plurality of ADMs;*

a plurality of DCS elements, each of said plurality of DCS elements being managed by said DCS EMS, at least one of said plurality of DCS elements including an ADM of said plurality of ADMs that is logically coupled to said non-homogeneous SONET ring network, said ADM being virtually coupled to said at least one DCS by a digital link, such that said non-homogeneous SONET ring network including said plurality of ADMs is managed by said SONET EMS, so that the respective DCS and SONET EMSs manage the hybrid ring structure in a manner that avoids logically decomposing the SONET network elements of the non-homogeneous

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SONET ring network into one or more SONET arcs."

Applicant's invention teaches at least one of the plurality of DCS elements includes an ADM that is logically coupled to the non-homogeneous SONET ring network. In the exemplary embodiment of FIG. 1, the first DCS 140 includes a plurality of ADM denoted as 142₁, 142₂, 142₃, and so on up to 142_n (collectively ADMs 142). The first DCS 140 also includes a plurality of input/output ports denoted as 144₁, 144₂, and so on up to 144_m (collectively ports 144). The DCS system 140 is capable of connecting signals between the various ports 144 and/or ADMs 142. By incorporating ADMs within the DCS a cost savings is realized since an ADM is necessary to connect to a SONET ring. Thus, the DCS 140 may communicate directly with SONET network elements such as ADMs formed into SONET ring structures. (See applicant's specification page 5, lines 28 through page 6, line 4).

Furthermore, referring to FIG. 3 of the applicant's invention "it is important to note that each of the DCS I/O modules 146₁ and 146₂, along with the DCS switching circuit 148, are physically included within a single hybrid DCS 140. However, according to the principles of the present invention, the ADM 142₁ is separated from the DCS 140 by a digital link (DL) 302, illustratively an STS-3 data link. Similarly, the ADM 142₂ is separated from the DCS 140 by a digital link 304, illustratively an STS-3 data link." (See applicant's specification, page 10 lines 3-8).

By contrast, the Norman reference discloses "DCS connections are point-to-point. They form a grid with DCS switches 50-59 at the intersection points of spans 60-72 which occupy physical routes 30-42. Each DCS switch is capable of switching traffic in any direction, as well as, adding and dropping traffic. These add/drop connections are not shown. The control over the switching is provided by Digital Cross-connect Management System (DCMS) 80." (see Norman, col. 4, lines 24-38, and FIG. 2).

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Norman further discloses in FIG. 5, "node 23 connects different rings and includes ring terminals 102, 105, and 108. These ring terminals are connected to other ring terminals at different nodes by spans 131, 132, 134, 135, and 141 respectively as shown on FIG. 3. The add/drop connections of the ring terminals are not shown. On FIG. 5, ring terminals 102, 105, and 108 are interconnected using DCS connections. The DCS connection is comprised of a DCS device or devices with the capability to interface, groom, and switch SONET traffic between ring terminals." (See Norman, col. 6, lines 42-51).

Accordingly, Norman discloses in one embodiment that add/drop connections are part of the DCS. However, Norman does not specify the composition of these add/drop connections (i.e., whether they are add/drop multiplexers (ADMs) or some other circuitry). Further, the DCS and add/drop connections are managed by the DCMS, which teaches away from the Applicants' invention where the add-drop elements within a hybrid DCS that form a SONET ring are not managed by a DCMS, but rather, are managed by a SONET manager. Norman is silent as to the existence of a SONET EMS in his disclosure.

In a second embodiment of Norman, the add/drop connections are explicitly stated as being a part of the ring terminals, as opposed to the DCS connections, which are used to connect ring terminals to each other. Nowhere in the Norman reference is there any teaching or suggestion of at least one of said plurality of DCS elements including an ADM of said plurality of ADMs that is logically coupled to said non-homogeneous SONET ring network. The Applicants' invention claims a hybrid DCS element where the hybrid DCS element includes an ADM connected in a SONET ring formed with additional ADMs outside the hybrid DCS element.

Furthermore, the Norman reference fails to teach or suggest how the

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add/drop connections in the second embodiment (FIG. 5) of Norman are managed. Recall in the first embodiment of Norman, (FIG. 2), the DCMS manages the add/drop connections of the DCS, which teaches away from the Applicant's invention.

Furthermore, the Lee reference discloses that a first linear network 100, a second linear network 110, and a ring mode network are interfaced to an element management system (EMS) through a LAN 36. The EMS serves to monitor the route alarm and propagational alarms generated from respective network elements, such as network elements 16, 18, and 20 disposed in the middle of the second linear network 110 (ADMs). (See, Lee, col. 1, lines 25-61). Lee does not teach Applicant's hybrid DCS element or the management of the hybrid DCS element and the ADM elements within the hybrid DCS element by different EMSs

Even if the two references could somehow be operably combined, the combined references would merely disclose either a DCS or ring terminal having add/drop connections, and a digital cross-connect management system (DCMS) managing the add/drop connections. Nowhere in the combined references is there any teaching or suggestion that the EMS is capable of managing an ADM that is part of a hybrid DCS. That is, nowhere in the combined references is there any teaching or suggestion of "a plurality of DCS elements, each of said plurality of DCS elements being managed by said DCS EMS, "at least one of said plurality of DCS elements including an ADM of said plurality of ADMs that is logically coupled to said non-homogeneous SONET ring network, said ADM being coupled to said at least one DCS by a digital link, such that said non-homogeneous SONET ring network including said plurality of ADMs is managed by said SONET EMS."

The combined references are silent with respect to managing a hybrid DCS having an ADM. Therefore, the combined references fail to teach or

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suggest the applicant's invention as a whole.

As such, the Applicant submits that independent claim 1, and similarly independent claims 4, 6, 8, and 11, are not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder. Furthermore, the claims 2-3, 5, 7, 9-10, and 12 respectively depend from independent claims 1, 4, 6, 8, and 11 and recite additional features thereof. As such, and at least for the same reasons as discussed above, the Applicant submits that these dependent claims are also not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder. Therefore the Applicant respectfully requests that the rejections be withdrawn.

B. Claims 13-17

The Examiner has rejected Claims 13 and 17 as being obvious under 35 U.S.C. §103 over Norman, Jr. (US 5,742,605, issued April 21, 1998 hereinafter "Norman") in view of Huang et al. (US 6,389,015, issued May 14, 2002, hereinafter "Huang"). The Applicant respectfully traverses the rejection.

The Applicant has amended independent claims 13 and 17 to include additional features that the Applicant considers as being inventive. For example, independent claim 13 (and similarly independent claim 17), recites:

"A method for adapting a communications network comprising the steps of:
identifying each network element within a network to be managed;
determining if hybrid DCS/SONET network structures are present in the network, each said hybrid DCS/SONET network structures comprising DCS element having an add-drop multiplexer (ADM) that is logically coupled to a SONET network;
decoupling, from said determined DCS/SONET network structures, those ADMs used to form hybrid ring networks;
managing said hybrid ring networks as network ring structures using a SONET element management system (EMS),

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so that the SONET EMS manages the hybrid ring networks in a manner that avoids logically decomposing the SONET network elements of the hybrid ring networks into one or more SONET arcs."

As discussed above, the Norman reference discloses that DCS elements that include add/drop connections are managed by a digital cross-connect management system (DCMS), as opposed to a SONET element management system. Therefore, Norman fails to teach or suggest the feature "managing said hybrid ring networks as network ring structures using a SONET element management system (EMS)."

The Huang reference merely discloses (referring to FIG. 2), ring 57 includes 4 ADMs 61-67 interconnected by links 69-75. Ring 57 is preferably a bi-directional line switch SONET ring. Ring management system 59 includes a computer programmed according to the method of the present invention. Ring management system 59 communicates with each ADM 61 to 67 through suitable communication links indicated by dash lines in FIG. 2. (See Haung, col. 4, lines 23-28).

The Huang reference fails to bridge a substantial gap as between the Norman reference and the applicant's invention. Nowhere in the Huang reference is there any teaching or suggestion of "managing said hybrid ring networks as network ring structures using a SONET element management system (EMS)." In particular, nowhere in the Haung reference is there any teaching or suggestion that the management system of Huang is capable of managing a plurality of ADMs wherein at least one of the plurality of ADMs in the ring is included in a hybrid DCS element that is logically connected to a SONET network. That is, Norman teaches that the DCMS manages ADMs in a hybrid DCS, while Huang discloses that a ring manager manages the ADMs when the ring is a pure SONET ring, as opposed to a hybrid (heterogeneous) ring as claimed by the Applicant. The Applicant's invention manages a hybrid DCS/SONET network differently from the teachings of the combined

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references. Neither Norman nor Huang provide any motivation for splitting management of a hybrid DCS between a SONET EMS and a DCS EMS.

Specifically, the SONET EMS manages a SONET ring element included within the hybrid DCS/SONET network structure of Applicants' invention, as opposed to the Norman and Huang references, where the DCMS and SONET EMS respectively manage a hybrid structure and elements of a pure SONET ring. Therefore, the combined references fail to teach or suggest the applicant's invention as a whole.

As such, the Applicant submits that claim 13 (and similarly, claim 17) is not obvious and fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder. Therefore, the Applicant respectfully requests that the rejections be withdrawn.

C. Claims 14-16

The Examiner has rejected Claims 14-16 as being obvious under 35 U.S.C. §103 over Norman, Jr. (US 5,742,605, issued April 21, 1998 hereinafter "Norman") in view of Huang et al. (US 6,389,015, issued May 14, 2002, hereinafter "Huang") and in further view of Jakobik et al. (US 6,195,367, issued February 27, 2001, hereinafter "Jakobik"). The Applicant respectfully traverses the rejection.

The Applicant's claims 14-16 depend from independent claim 13 and recite additional features that the Applicant considers as being inventive. For example, independent claim 13 and dependent claim 14 (and similarly, dependent claims 15 and 16) recite:

*"A method for adapting a communications network comprising the steps of:
identifying each network element within a network to be managed;
determining if hybrid DCS/SONET network structures are present in the network, each said hybrid DCS/SONET network structures comprising DCS element having an ADM that is logically coupled to a SONET network;
decoupling, from said determined DCS/SONET network structures,*

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*those ADMs used to form hybrid ring networks;
managing said hybrid ring networks as network ring structures using
a SONET element management system (EMS)
so that the SONET EMS manages the hybrid ring networks in a
manner that avoids logically decomposing the SONET network elements of
the hybrid ring networks into one or more SONET arcs.*

*The method of claim 13, further comprising the step of:
inserting an additional ADM between a hybrid DCS/SONET structure
and a hybrid ring utilizing an ADM network element within said hybrid
DCS/SONET structure."*

As discussed above, nowhere in the combination of Norman and Huang is there any teaching or suggestion of "managing said hybrid ring networks as network ring structures using a SONET element management system (EMS)." Therefore, the combination of these two references fails to teach or suggest the Applicant's invention as a whole.

Furthermore, the Jakobik reference merely discloses that "the optical electrical layer also includes the express transport nodes 2 and 3, which serve a transport related purpose by connection the CO 1 to the express rings 4 and 5 as in arrangements of FIGs. 1 and 2, but which now additionally serve to CO-related purposes. Firstly, these nodes 2 and 3 act as an interface between the collector ring transport nodes 6-11 and the DCS switch 19 on one hand, and the OXC switch 22 on the other hand. Secondly, they each interconnect subsets of the attached collector ring transport nodes 6 through 8 through 9-11. (See, Jakobik, col. 7, lines 28-41). Even if the three references could somehow be combined, the combination would merely disclose at best a DCS having add/drop connections that is managed by a DCMS and a pure SONET ring managed by a SONET EMS.

Neither Norman nor Huang provide any motivation for splitting management of a hybrid DCS between a SONET EMS and a DCS EMS. Nowhere in the combined references is there any teaching or suggestion of the steps set forth as recited by the Applicant's invention, which include

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“managing said hybrid ring networks as network ring structures using a SONET element management system (EMS).” Therefore, the combined references fail to teach or suggest the applicant's invention as a whole.

As such, the Applicant submits that these dependent claims are not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicant respectfully requests that the rejections be withdrawn.

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CONCLUSION

Thus the Applicants' submit that claims 1-17 are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Steven M. Hertzberg or Eamon J. Wall, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted



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